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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,521	07/22/2003	Shigeo Kofune	240465US3	5814

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EXAMINER

JAGAN, MIRELLYS

ART UNIT PAPER NUMBER

2859

DATE MAILED: 05/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

877

Office Action Summary	Application No. 10/623,521	Applicant(s) KOFUNE ET AL	
	Examiner Mirellys Jagan	Art Unit 2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2005.
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
 4a) Of the above claim(s) 4, 5 and 17 is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-3 and 6-16 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☒ The drawing(s) filed on 22 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 4, 5, and 17 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, which was made final in the last Office action. However, Applicant's amendment fails to provide the proper status identifiers ("Withdrawn" should be used instead of "Original") for these withdrawn claims. Appropriate correction is required.

Claim Objections

2. Claims 2 and 3 are objected to because of the following informalities:

Claim 2 states that the members have a rod shaped 'portion'. However, it is not clear if the claimed rod-shaped 'portion' is referring to the members (2, 3A) themselves having a rod-shape, or if it is referring to the threaded portions (4) of the members.

Claim 3 is objected to for being dependent on an objected base claim. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 6-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 2,946,835 to Westbrook et al [hereinafter Westbrook] in view of U.S. Patent 1,823,706 to Staehle.

Westbrook discloses a thermocouple comprising:
a first member (12) formed of a high melting point material (boronated carbon);
a second member (11) formed of carbon system material (graphite); and
an electrically insulating spacer fixed to the second member but not to the first member;
wherein the spacer is positioned so that it maintains a spacing between the first and second members; and the first and second members are threadedly connected at a connected portion that serves as a temperature measuring portion. Westbrook teaches that the thermocouple is used for measuring high temperatures in above 2000°C (see figure 1; column 2, lines 46-57; and column 2, line 69-column 3, line 5).

Westbrook does not disclose the first member being formed of a high melting point metal carbide, the carbide being TaC, WC, TiC, HfC, NbC, or ZrC; and the high melting point metal carbide being produced or formed as claimed.

Staehle discloses a thermocouple comprising a first member (1) formed of a high melting point metal carbide (e.g., TaC); and a second member (2) formed of carbon system material (graphite) wherein the first and second members are connected at a temperature measuring portion. Staehle teaches that a high melting point metal carbide used with a carbon system material are useful materials for making a thermocouple since they allow temperatures greater than or equal to 2000°C to be measured (see lines 8-26 and 45-51).

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Referring to claim 1, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the thermocouple of Westbrook by using a high melting point metal carbide as the material for the first member, since Staehle teaches that using a high melting point metal carbide with a carbon system material is useful for making a thermocouple to measure temperatures in excess of 2000°C.

Referring to claims 7 and 9-12, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the thermocouple of Westbrook and Staehle by using WC, TiC, HfC, NbC, or ZrC as the metal carbide since Staehle teaches that a metal carbide is a useful material for measuring high temperatures, and since the elements Ta, W, Ti, Hf, Nb, and Zr are all similar metallic transition elements belonging to adjacent Groups (i.e., Groups 4-6 in the periodic table).

Referring to claims 14 and 15, these claims are “product by process” claims since the claim language is directed to the steps required to form the metal carbide rod. Therefore, these steps have been given no patentable weight since it has been held that: 1) the determinations of patentability in “product by process” claims is based on the product itself, even though such claims are limited and defined by the process; and 2) the product in a “product by process” claim is unpatentable if it is the same as, or obvious from, a product of the prior art, even if the prior art product was made by a different process. See *In re Thorpe et al.*, 227 USPQ 964 (Fed. Cir. 1985).

5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Westbrook and Staehle in view of U.S. Patent 6,458,218 to Savich.

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Westbroook and Staehle disclose a thermocouple having all of the limitations of claim 1, as stated above in paragraph 4, wherein the thermocouple is made by forming the metal carbide member and the carbon system member, and threadedly connecting them at a connecting portion, but are silent as to how the metal carbide member is formed, and therefore do not explicitly disclose forming the metal carbide member by covering a metal rod with carbon powder and compressing them in a high temperature condition to carbonize the rod material to produce the metal carbide member.

However, Savich discloses how a metal carbide member is produced. Savich discloses that a metal carbide member is made by covering a metal member with carbon powder and compressing them in a first high temperature condition, which is then raised to a second temperature in the range of 1000-1200°C, to carbonize the materials to produce the metal carbide member. The method is useful for providing a member made of TaC (see column 5, lines 31-44, and column 7, line 67-column 8, line 18).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the thermocouple disclosed by Westbroook and Staehle by forming the metal carbide member as taught by Savich, since Savich teaches that such a method is useful for providing a member made of TaC, which is used as the metal carbide material in the Westbroook and Staehle thermocouple.

Allowable Subject Matter

6. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and

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any intervening claims, and amended to overcome the objections set forth in this Office action.

Claim 3 is allowable for being dependent on allowable base claim 2.

7. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not disclose or suggest the following in combination with the remaining limitations of the claims:

A temperature measuring apparatus comprising an end of each member being connected at the connected portion using a connecting member formed of either material of the members to serve as the temperature measuring portion (see claim 2).

Response to Arguments

8. Applicant's arguments with respect to claims 1-3 and 6-16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mirellys Jagan whose telephone number is 571-272-2247. The examiner can normally be reached on Monday-Friday from 11AM to 4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571-272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MJ
May 3, 2005



**GAIL VERBITSKY
PRIMARY EXAMINER**